

**AOAC EUROPE SECTION  
INTERNATIONAL WORKSHOP**

**Enforcement of European Legislation on Food and  
Water: Analytical and Toxicological Aspects**

**And**

**II ENCONTRO NACIONAL DE BROMATOLOGIA,  
HIDROLOGIA E TOXICOLOGIA**



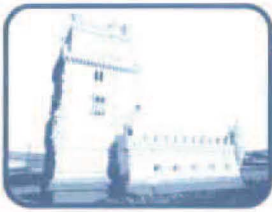
**ABSTRACTS BOOK**

**Lisbon, 17th and 18th of April 2008**



ORDEM DOS FARMACÊUTICOS





## **5FNFA**

*Food Nutrition and Food Allergens*

### **Soybean oil from GM seeds: chemical characterization during fat extraction and refining processes** *Joana Costa<sup>1</sup>, Joana S. Amaral<sup>1,2</sup>, Susana Casal<sup>1</sup>, Isabel Mafra<sup>1</sup>, M. Beatriz P.P. Oliveira<sup>1</sup>*

1 REQUIMTE, Serviço de Bromatologia, Faculdade de Farmácia, Universidade do Porto, Rua Aníbal Cunha 164, 4099-030 Porto, Portugal.

2 ESTiG, Instituto Politécnico de Bragança, Bragança, Portugal.

Soybean is one of the most important genetically modified (GM) crops, totalizing 83.8 millions of planted hectares, which correspond to 57% biotechnological planted area<sup>1</sup>. Soybeans are an exceptional source of polyunsaturated fat, high quality proteins and high levels of vitamin E, a very important class of antioxidants that occur naturally in vegetable oils<sup>2</sup>. This oilseed supplies 30% of total oil production.

The aim of this work was to determine the compositional evolution during the extraction and refining processes of soybean oil production from GM crops. Samples were collected during the pre-extraction steps (cracking, lamination and extrusion-expelling), the extracted crude oil, and the 4 oil refining steps (neutralization, washing, bleaching and deodorization). Chemical characterization included total fat content, moisture and fatty acid profile evaluated according to official methods. Vitamin E profile was also evaluated by HPLC-DAD-FL3.

Total fat content showed that each pre-extraction step of soybeans is crucial to maximize oil extraction (from 17% to 21%). After solvent extraction, soybean flakes contained only 1% of residual fat. Along refining, vitamin E losses were about 30% with remaining contents of around 900 mg/kg. The main tocopherols of soybean oil are g- and d-isomers. Fatty acid composition did not change significantly along the refining process, except for trans isomers contents that increased (from 0.1% to 0.7%) in the last refining step (deodorization).

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